DOCUMENT RESUME

ED 110 131 JC 750 438

AUTHOR Magidson, Errol M.
TITLE Developing an Individualized Learning Course for an Urban Community College.
PUB DATE Jul 75
NOTE 37p.; Ed.D. Practicum, Nova University. Not available in hard copy due to marginal legibility of original document

EDRS PRICE MF-$0.76 PLUS POSTAGE. HC Not Available from EDRS.
DESCRIPTORS *Curriculum Development; Educationally Disadvantaged; *Evaluation Criteria; *Individualized Instruction; *Instructional Design; Instructional Innovation; *Junior Colleges; Student Attitudes

ABSTRACT

In inner city community colleges, problems of improving student achievement and enhancing positive attitudes toward learning are compounded by lack of adequate training in basic academic skills. A pilot project was undertaken at Kennedy-King College (Illinois) to assist instructors in developing individualized learning courses. Following a review of several instructional models, the investigator assisted a faculty member in developing an individualized learning module for a social science course, based on Herrscher's model of individualized instruction--a mastery learning approach. An evaluation form was devised to give a quantitative measure of the module's potential value along four dimensions: system (application of components of the learning model), approach (application of learning principles), format (presentation medium), and content (academic material). The module was revised on the basis of the evaluation results, and was presented to a social science class. Although student achievement on post-test scores did not meet expectations, 80 percent of the students rated highly their enjoyment of the learning experience. (BB)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED110131

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN-
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE-
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

DEVELOPING AN INDIVIDUALIZED LEARNING COURSE FOR AN URBAN COMMUNITY COLLEGE

by

Errol M. Magidson, M.A.T.

Kennedy-King College

A PRACTICUM PRESENTED TO NOVA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

NOVA UNIVERSITY

July 25, 1975

JC 750 438

TABLE OF CONTENTS

I. Introduction..... 1

II. Background and Significance..... 2

A. Rationale..... 2

B. Individualized Instruction..... 3

C. Instructional Models..... 5

III. Procedures.....14

A. Methodology.....14

B. Development of an Individualized Learning Module.....17

IV. Results: Assessment of the Learning Module.....18

A. Critique.....18

1. Explanation.....18

2. Assessment.....21

B. Student Achievement.....23

C. Student Attitudes.....25

V. Recommendations.....27

APPENDIX

Individual Posttest Scores.....29

FOOTNOTES.....30

BIBLIOGRAPHY.....32

Figures

1. Kemp's Instructional Design Model..... 7

2. Gagne's Model of Procedures Used in the Development of Human Components of Systems. 8

3. DeCecco's Teaching Model.....11

4. Kibler, Barker, and Miles General Model of Instruction.....11
5. Herrscher's Instructional Model.....13
6. An Individualized Learning System.....15
7. Frequency Distribution of Achievement Scores..24
8. Histogram of Achievement Scores.....24

Forms

1. Lesson Evaluation Form (critique).....20
2. Individualized Lesson Evaluation (student attitudes).. 26

Developing an Individualized Learning Course for an Urban Community College

I. Introduction

During the past three academic years Kennedy-King College, one of the City Colleges of Chicago, has had an enrollment of about 10,000 students, yet less than 400 of these students have graduated each of these years. Although it is true that the full-time enrollment is substantially less than 10,000 (about 6,000 in 1974) and that the College serves inner-city residents, many who lack basic academic skills, the harsh reality remains that the College is having difficulty meeting the needs of its students.

This practicum proposes a curricular and instructional process and format in the form of an individualized learning course to be integrated into the regular course structure which is intended to accommodate most inner-city, community college students. To meet the time constraints imposed by setting up an entire course and to pilot-test the proposal, this writer consulted an instructor in the Social Science Department on developing and testing a module on the "Ideological Spectrum."

II. Background and Significance

A. Rationale

The traditional community college class actively involves only the instructor and, at most, a handful of students whom he somehow manages to reach through lecture and some discussion. The individual student is neglected.

In the case of the inner-city community college, such as Kennedy-King College, the problem of improving student achievement and enhancing positive attitudes towards learning is compounded by the lack of adequate training in basic academic skills.

Educators should recognize and accommodate individual differences among students if they want to see improved student achievement and more positive student attitudes towards learning. There are several assumptions which support the development of individualized learning courses:

1) Americans have traditionally accepted the principle emphasizing the fundamental worth, dignity, rights and freedoms of the individual. Educators should develop more alternative educational programs to help students achieve their educational goals and to provide educational opportunities for potential students who might otherwise not be able to participate.

2) As society becomes increasingly complex, centralized and automated, the individual may feel he is losing some of

his individuality. Educators should promote more individuality to foster each individual's growth, creativity and self-worth.

3) Individuals differ in terms of their needs, interests, backgrounds, and learning styles. Educators should meet these differences by taking them into account in their instruction.[2]

4) Learning takes place more readily and to a greater extent when the learner is actively involved in the learning process.[3] Educators should find ways to help traditionally passive learners take an active role in deciding what and how they learn.

B. Individualized Instruction

An individualized learning course is built on what is commonly called individualized instruction but which would be better named "individualized learning module" (ILM) because the focus is on learner achievement rather than on teaching. Russell defines a module as follows:

> ...an instructional package dealing with a single conceptual unit of subject matter. It is an attempt to individualize learning by enabling the student to master one unit of content before moving to another. The multi-media learning experiences are often presented in a self-instructional format. The student controls the rate and intensity of his study....The length of the module may vary from only a few minutes of student time to several hours.[4]

Individualized instruction as a systematic approach to instruction does not represent new thinking. In

1935 Ralph Tyler conceptualized an approach using specific behavioral objectives and applying these to instruction and testing.[5]

Individualized instruction was used by proponents of mastery learning in the 1950's and 1960's when programmed instruction rose to prominence.[6] B. F. Skinner's article on "Teaching Machines," published in Scientific American in November 1961, proposed three principles which were to serve as an adjunct to mastery learning. The first was that the learner must be involved in what he is learning; according to Skinner, "There is a constant exchange between program and student." The second principle was that a student will learn whatever he responds; thus good instruction supposedly demands a design that will ensure minimal error. The third was that the student must be provided with "knowledge of results," which is especially important when he does make a mistake.[7]

Programmed instruction compelled the lesson designer to think carefully about the structure and sequence of instruction. Unlike textbooks, which tended to be reference-oriented, programmed instruction was teaching-oriented. In many cases it fostered relevant instruction because it forced the lesson designer to face up to the issues involved.[8]

Programmed instruction declined in popularity during the late 1960's because the very small-step learning it

applied was too tedious for many learners and because other forms of individualized instruction, such as audio-tutorial instruction, applied a more inclusive systematic design.

C. Instructional Models

In order to be effective, individualized instruction should follow a prescribed design. Most instrcutional models can be characterized by four features, including behavioral objectives, feedback between steps, flowchart demonstrating process, and recycling process which permits revision.[9]

Instructional models serve as guidelines for instructional development, which is the systematic process used to design, create, and evaluate instructional programs. Models most useful to the development of individualized instruction were developed either by instructional technologists or by curriculum and psychological teaching specialists. Several of those models which seem to have applicability for this practicum are discussed below:

1) Douglas Model. In 1971 Douglas developed a "Three-Phase Systematic Instructional Development Model" for use with staff at Burlington County College in Pemberton, New Jersey. Part One dealt with what the instructor should do: a) analyze student learning needs; b) write learning objectives; c) design teaching-learning strategies;

d) implement teaching-learning strategies; e) evaluate learning outcomes; and e) revise objectives and strategies. Part Two is divided into three phases each of which relates directly back to the steps enumerated in Part One. Every time the instructor goes through a phase in Part Two, he repeats the same functions but at a more sophisticated level. For example, evaluation of a Phase One project concentrates on retention and achievement. A Part Two project concentrates on validation.[10]

2) Kemp Model. Kemp (1971) developed an eight-step model (see p. 7): a) List topics and their purposes; b) list the characteristics of the target student group; c) specify learning objectives; d) list the subject content that supports each objective; e) design pretests to determine if the student has the prerequisite skills and how much he knows about the topic; f) choose teaching/learning activities and instructional resources; g) coordinate supportive services including budget, personnel, facilities, equipment and schedules to put the instructional plan into effect, and h) evaluate student learning in terms of student mastery of objectives and revise any phases of the plan needing improvement.[11]

3) Gagne Model. Gagne (1962) designed a model which specifically takes into account both people and machines and divides instructional development into three stages: design stage, development stage and testing stage. The model (see p. 8) begins with a statement of system purposes

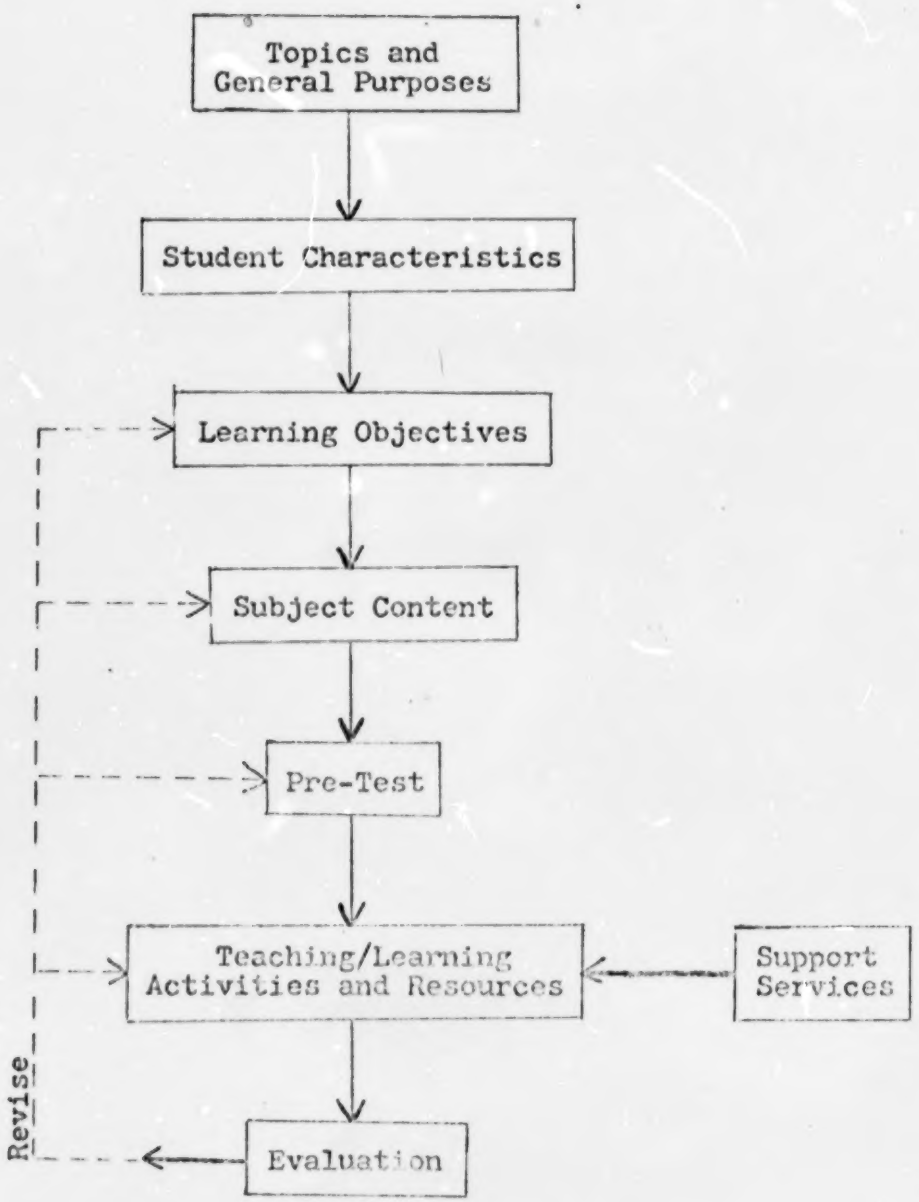


Figure 1 --Kemp's Instructional Design Model

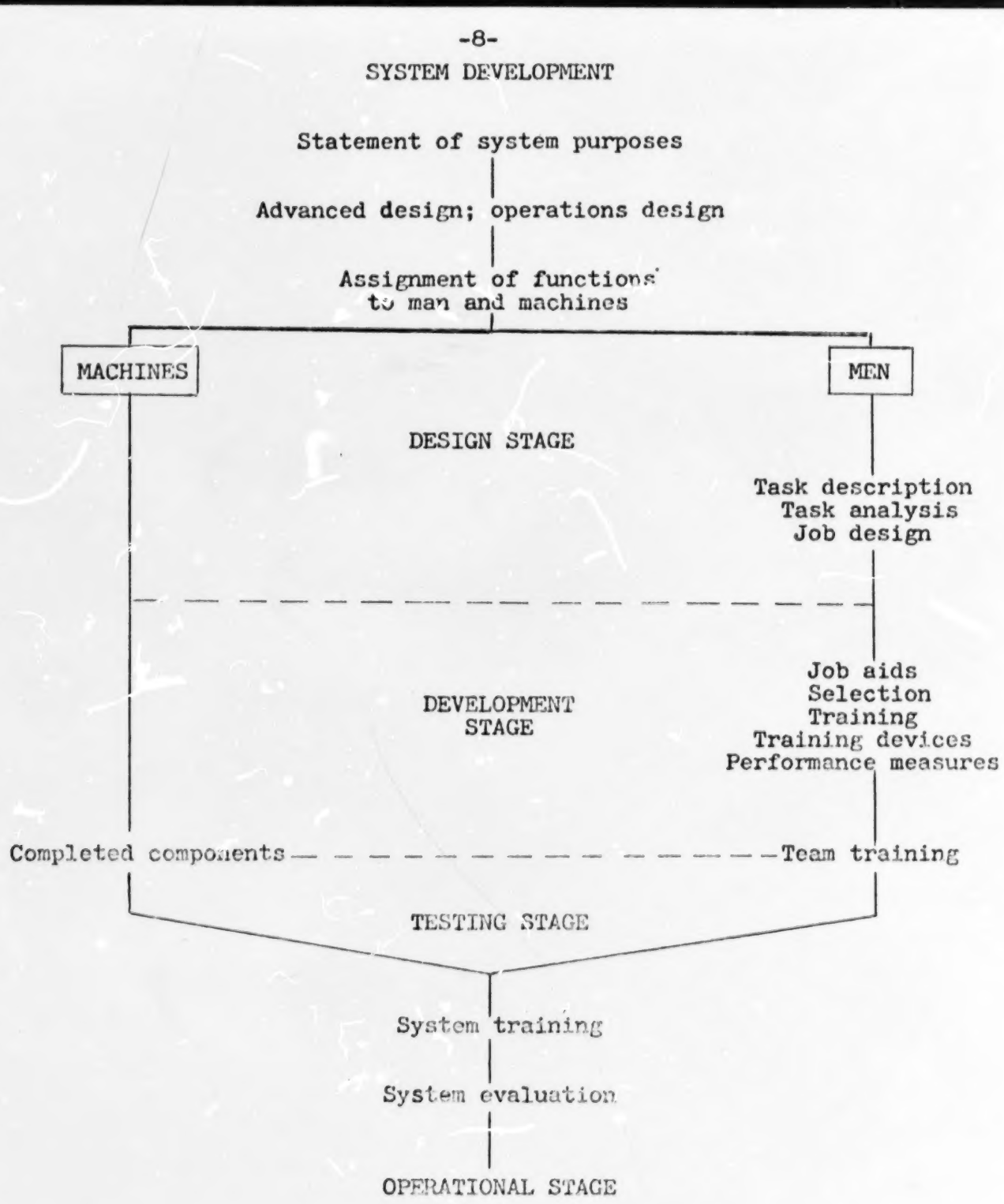


Figure 2 -- Cagne's Model of Procedures Used in the Development of Human Components of Systems.

or the goals of the system; then plans are enumerated on how the system is to work; then roles are assigned to man and machines. Task descriptions are statements indicating what man and machine are doing. Each task is analyzed to determine the extent to which each type of human behavior required can be attained through the use of available techniques (job supports, selection, and training). Jobs are designed on the basis of the number of tasks, their length, and their physical place in the design stage.

The development stage sets the production of instructional materials. Job aids provide for information storage (checklists and instructional manuals). Selection of personnel would be accomplished on the basis of aptitude tests. Individual and team training would be based on learning principles relevant to the kinds of performances needed. Performance measures would determine if the intended outcomes were achieved. Testing would occur throughout this phase.

The testing stage provides data for revision. An evaluation is made of how people perform in relation to previously set standards.

4) DeCecco Model (see p.11). DeCecco (1968) divided the teaching process into four components to conceptualize it. Instructional objectives are those that the student should achieve by the completion of a unit of instruction. Entering behavior defines prerequisite skills and interacts

with instructional objectives.

Instructional procedures describe the teaching process and vary with the instructional objectives and with the kind of learning (skills, language, concepts, principles or problem-solving) that is taught.

Performance assessment involves testing and observing. Failure to achieve mastery learning means that the appropriate instructional component needs to be revised.[13]

5) General Model of Instruction (see p. 11). This model was developed by Gagne, Glaser and Popham (1965) and revised by Kibler, Barker and Miles (1970). It strives to guide instructional developers and instructors through the major steps in designing and implementing instruction and to provide a framework for studying the instructional process.

Instructional objectives are used only for planning instruction, not for students to read. They are selected on the basis of what students can do before the instruction; what the student should be able to do with the instruction that follows the unit and upon completing his education; and on the available instructional resources, including the instructor's capabilities with the subject matter.[14] Educational taxonomies developed by Bloom and others define instructional objectives by level of difficulty and are used in this model.[15] Mager's work on Preparing Instructional Objectives is also used.[16]

Pre-assessment or pretesting is used to determine

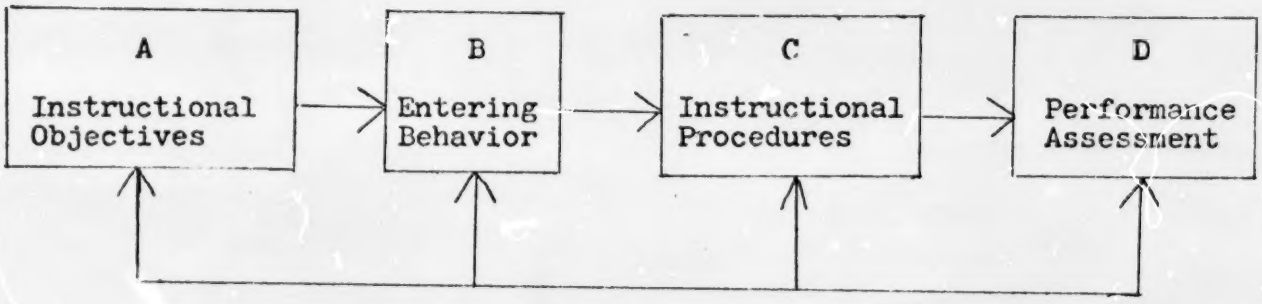


Figure 3--DeCecco's Teaching Model.

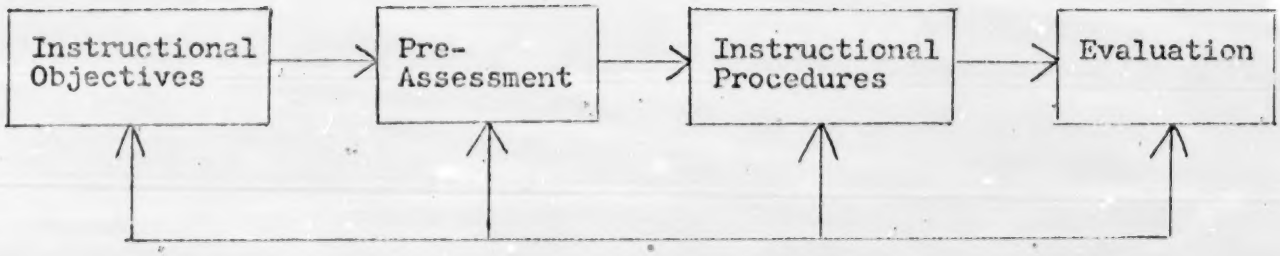


Figure 4 --Kibler, Barker, and Miles General Model of Instruction.

whether or not the student has the prerequisite skills, which objectives he has already mastered, and where in the module he should begin.

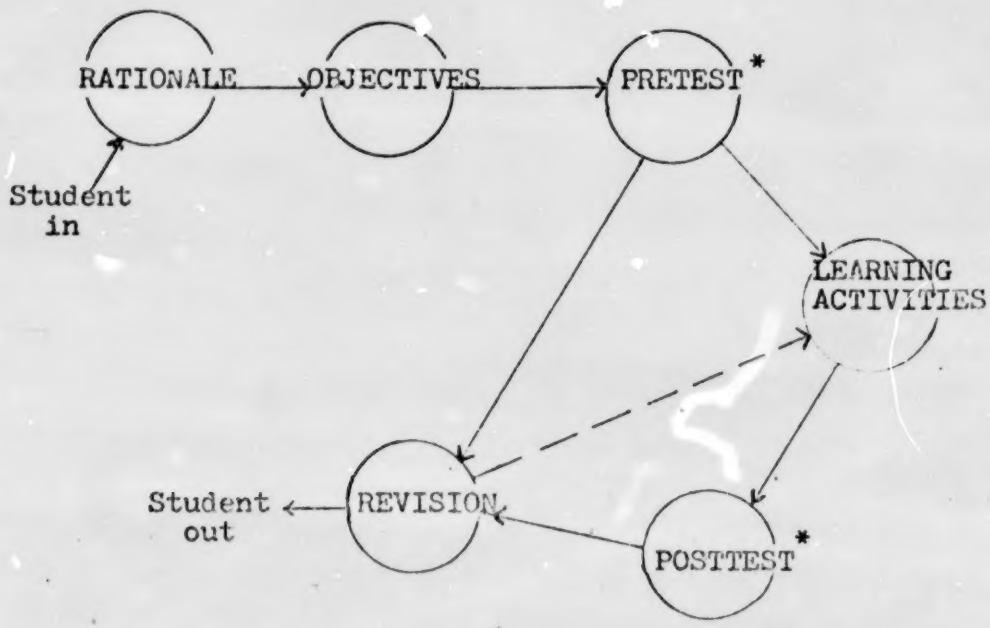
Instructional procedures comprise selection of materials, preparing new materials if necessary, and developing a plan for carrying out the objectives.

Some learning principles taken into account by this module include: a) pre-learning preparation of the student; b) motivation; c) model of end performance; d) active responding; e) guidance by the instructor; f) practice; g) immediate feedback; h) graduated sequences of instruction; i) accommodation for individual differences; and j) teaching performance skills for stimulating interest, giving explanation and guidance, and managing classroom behavior.[17]

Students and instruction are evaluated as the students complete the modules. Revision is made where needed on the basis of student performance on tests.

6) Herrscher Model (see p. 13). Herrscher's model (1971) represents a synthesis of designs suggested by Ralph Tyler, W. James Popham, Bela Banathy, and Jerrold Kemp. It forms a compact, operational learning system involving six basic steps: a) rationale; b) specific instructional objectives; c) pre-assessment; d) learning activities; e) post-assessment; and f) revision.[18] It focuses on teaching and learning while accommodating various teaching methods. It stresses mastery learning.

Fig. 5--Herrscher's Instructional Model



*Herrscher's actual terms are "pre-assessment" and "post-assessment."

III. Procedures

A. Methodology

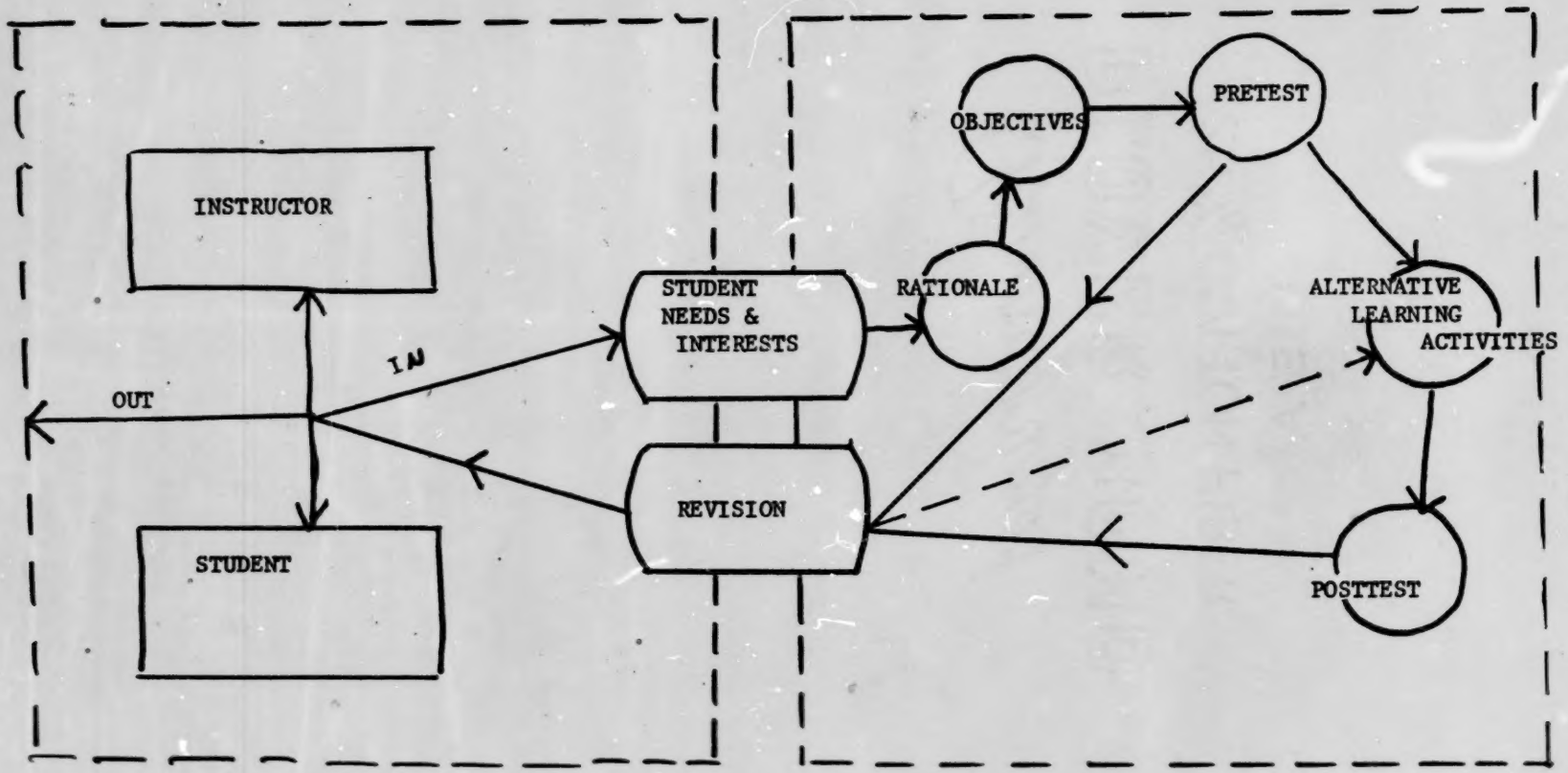
A systematic instructional model was developed to take into account the needs and interests of individual students and the constraints posed by traditional educational institutions and the similar backgrounds of urban inner-city students.

To ensure mastery learning a two-dimensional instructional model was developed which would take into account the learner, the instructor and the instruction. On one level is the dynamic interchange of ideas between the instructor and the student. On the other level is the student's interaction with the course syllabus (see diagram on page 15). The course syllabus contains the overall course rationale and goals, as well as a series of individualized learning modules.

During the first meeting, the instructor and student would discuss how the course can meet the special characteristics of the student. When there is mutual agreement, the student would sign a learning contract drawn up by him and his instructor; this contract would contain the objectives the student would strive to achieve.

Although the student would work at his own pace, he would make regular appointments with the instructor to discuss and ascertain his progress. These meetings would provide opportunities for the instructor to consider revising portions of the syllabus, as well as to bring out for

Fig. 6--AN INDIVIDUALIZED LEARNING SYSTEM



discussion salient points in the instruction. Each meeting would usually require only ten minutes.

The individualized learning modules of the syllabus would follow Herrscher's instructional model (see p. 13).[19] This model has the advantages of being compact, highly operational, easily understood and well-organized for the student, and easily reviewed by the instructor. There would be a rationale to explain the meaningfulness of the instruction to the student; learning objectives to state what the expected outcomes of student behavior are; a pretest to determine if the student meets prerequisites necessary to begin the learning activities or to determine which activities the learner already knows; alternative learning activities employing a variety of media (such as texts, magazine articles, films, TV, CAI) and experiences (such as field studies, interviews, and critical-incident discussions); and a posttest to determine if the student has met the learning objectives. If he has not demonstrated mastery, the student is "recycled" through the system. Enrichment activities could be made available for the student who wants to pursue the theme of a given module in greater depth.

Final assessment of the student's achievement would not occur until the student had completed the course objectives. No student would be penalized for not completing the course requirements; he would receive an incomplete.

By the same token, some students might complete the course sooner than the end of a semester. This approach follows John Carroll's model of learning: the degree of learning is a function of the amount of time the student is given to learn divided by the amount of time he spends.[20] Student achievement would be evaluated on a criterion-referenced basis.

The instructor's role in the individualized learning course is largely one of learning facilitator. The instructor would help the student identify his needs, interests and optimal strategies for going through the instruction. He would motivate the student. He would diagnose the student's difficulties with the instruction. He would identify sources of additional help for the student. He would assess the student's progress. He would help revise the course syllabus.

B. Development of an Individualized Learning Module

Owing to the time constraints imposed, a pilot project was organized; it consisted of a) obtaining agreement by a faculty member to develop an individualized learning module which followed the suggested model; b) serving as a consultant to the faculty member in the development, process and content of the module; c) seeing that the module was tested on students in one of his classes; d) evaluating the module by writing a critique

and by assessing student achievement and attitude towards the instruction; and e) helping the faculty member revise the module.

Lux Henniger, an instructor in the Social Science Department at Kennedy-King College and chairman of that department, agreed to participate in the pilot project. He developed an individualized learning module entitled "Where Do You Stand" on the topic, "the ideological spectrum," which is covered in Social Science 102. This course is a second course on the fundamentals of social science. According to the Kennedy-King College Catalog 74/75, it covers "economic problems of complex society and the problems of the social organization of government." It offers three credit hours.

The instructor followed the Herrscher model of instruction (see p. 13). The module was in booklet format and consisted of 18 pages.

IV. Results: Assessment of the Learning Module

A. Critique

Explanation

The most conclusive critique of a learning module would be a summative evaluation written on the basis of student achievement and attitudes toward the instruction which would be accomplished after the module had been tested and revised. Even before student testing and revision, the lesson should be formatively evaluated by at least one

colleague for a professional opinion. Unfortunately, the ideal situation of critiquing, revising, student-testing, and revising which should occur before presentation of the lesson to an entire class does not always lend itself to such a practical concern as the time the lesson topic fits into the semester schedule. In this case, the lesson could not receive sufficient professional review and student testing in time to be revised before its presentation to the class. The writer reviewed the lesson on the "ideological spectrum" that became the one the students in the instructor's Social Science 102 class used.

A critique format was developed to give a quantitative measure of an individualized learning module's potential value for student use. This critique is offered on page 20.

This critique is divided into four parts: System, Approach, Format and Content. System refers to the learning system or model used and how well its components are applied. Thirty possible points are assigned to and divided among the components of the Herrscher model: rationale, objectives, pretest, learning activities, posttest and revision.

Approach refers to the learning principles applied throughout a module. Thirty-six possible points are assigned to and divided among six sub-categories; active-learner involvement, immediate feedback (quantity and quality), sequencing (order of difficulty), language/vocabulary,

LESSON EVALUATION FORM

Lesson title: "Where Do You Stand?" Author: Lux Henniger
Lesson topic: ideological spectrum Reviewer: Errol Magidson
Completion/Revision Date: 5/75 Date: 5/75

Category	Possible Points	Assessment
A. System		
1. Rationale	3	3
2. Objectives	5	3
3. Pretest	5	4
4. Learning Activities	5	5
5. Posttest	5	4
6. Revision	5	4
	30	23
B. Approach		
1. Active learner involvement	6	3
2. Immediate feedback/reinforcement	6	5
3. Sequencing	6	5
4. Language/vocabulary	6	6
5. Variety	6	4
6. Motivation	6	5
	36	28
C. Format		
1. Accessibility	6	6
2. Physical appearance	6	5
3. Self-containment	6	6
	18	17
D. Content		
1. Accuracy	10	7
2. Relevancy/appropriateness	6	5
	16	12
TOTALS:	100	80

variety and motivation.

Format refers to the medium used to present the lesson. Eighteen possible points are divided among three sub-categories: accessibility, physical appearance (size, print, illustrations) and self-containment.

Content refers to the lesson's academic material. Sixteen points are divided between accuracy and relevancy/ appropriateness to the curriculum.

Each sub-category being evaluated was assigned five or six possible points except for "accuracy" in the Content category. Accuracy of content is crucial to the usefulness of any module. Using excellent learning techniques and principles would be wasteful if the content were incorrect or misleading. A total of 100 points were allotted to allow for a quick overall assessment. For example, a rating of 95 points would suggest that the module was an excellent one; points lacking in any one sub-category would pinpoint areas needing improvement.

Assessment

This critique was discussed with the author and helped him revise the lesson. Overall, the individualized learning module on the "ideological spectrum" was fairly good without serious flaws except for active-learner involvement. The total rating was 80.

Under the category labelled System, the rationale was relevant but may have been a bit misleading in terms of

what the module was to discuss. The module was less "where do you stand" as was the main idea in the rationale than how people's views are categorized as was the main idea of the module. The objectives should have explicitly included learning to label the ideological spectrum and to identify the terms comprising the spectrum since these were two important areas included in the posttest. The pretest was unique in that the student was asked to rate himself on how well he could write a 200-word statement on topics covered in the module. It may have been improved if there were a brief quiz to determine if the student could pass the posttest without taking the instruction and if such a quiz could give the student an idea of how the posttest would look. Learning activities were included. The module could be fairly easily revised though retyping might be a chore. Student input was requested on his or her attitude towards the instruction.

Under the category labelled Approach, active-learner involvement left much to be desired. There was a great need for much more student interaction within each topic. Immediate feedback was available. The student was required to answer several questions which called for several sentences; this was nicely handled by having him compare his answer with one provided by the author. The sequencing of material followed the simple-to-complex format; more review questions should have been asked. The language used was appropriate

to the low reading levels of most urban community college students. More variety of instruction and types of questions could have been used. The lesson seemed motivating.

Under the category labelled Format, the lesson was easily accessible to the students; indeed, each student had his own booklet in which to write and to use anywhere, anytime. The physical appearance could have been improved by the addition of some pictures. The lesson was self-contained.

Under the category labelled Content, the lesson material was accurate, though some information was left out, misleading or difficult to comprehend. The "middle-of-the-road" viewpoint should have been discussed. More accurate characterization of liberal and moderate conservative ideologies should have been provided. Moderate conservatives were portrayed as viewing man as "evil." The classical viewpoints towards change of these two ideologies should have been presented. The content was basically relevant and appropriate to the curriculum.

B. Student Achievement

Seventeen students in a Social Science 102 class at Kennedy-King College completed the individualized learning module on the "ideological spectrum" during the spring semester 1975. The individual scores on the posttest are given in Appendix A on page 29 . A frequency distribution and histogram are given on page 24.

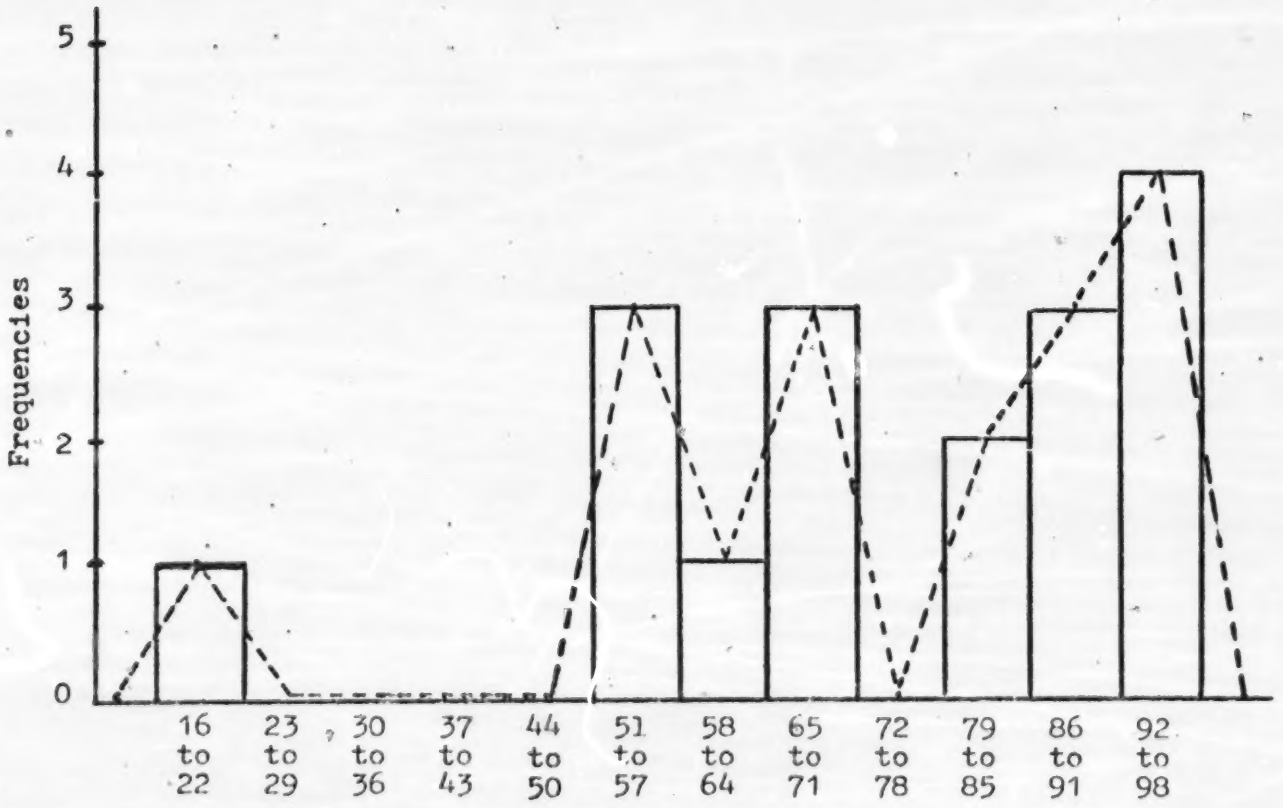
Fig. 7--Frequency Distribution of Achievement Scores

Scores	f
92 - 98	4
86 - 91	3
79 - 85	2
72 - 78	0
65 - 71	3
58 - 64	1
51 - 57	3
44 - 50	0
37 - 43	0
30 - 36	0
23 - 29	0
16 - 22	1
	N = 17

Mean = 74.706

Median = 83

Fig. 8--Histogram of Achievement Scores



The mean (74.706) of the posttest scores is a less accurate measure of central tendency than the median (83) because of the one very low score of 22.

The original objective of 80% of the students scoring 80 or above on the posttest (14 of 17) did not hold. The module should have been revised first on the basis of professional review and testing by one or two students. Mastery learning was achieved by 9 students (64.3%).

C. Student Attitudes

An "Individualized Lesson Evaluation" questionnaire designed to measure student atttitudes towards the module on the "ideological spectrum" was given to the students in the Social Science 102 class. A copy of this form appears on page 26.

On the important question, "Did you enjoy this lesson," 12 of 15 respondents (80%) answered favorably: 6 indicated "quite enjoyable" and 6 indicated "one of the most enjoyable educational experiences I have had;" only 1 responded negatively. Thus the general student attitude towards the module was positive.

The students believed that the material they saw in the module was most effective in its individualized format: 12 of 16 respondents (75%) indicated "individualized presentation seems most effective;" only 1 student indicated that another kind of presentation would have been more effective (lecture).

Lesson: "Where Do You Stand" Date: _____

Individualized Lesson Evaluation

Your impressions of this individualized lesson can provide valuable information for improving the teaching material. The time you spend in answering the following questions will be greatly appreciated.

1. Did you enjoy this lesson? (Check one.)

6* one of the most enjoyable educational experiences I have had
6 quite enjoyable
2 neutral (so what?)
__ a rather negative experience
1 one of the least enjoyable educational experiences I have had

2. Do you think the material you saw could have been taught as rapidly or completely if it had been presented by a more usual educational medium (such as lecture or textbook)?

12 No, individualized presentation seems most effective
3 Yes, presentation would have been equally effective by (list other media) "films" listed once
1 Yes, presentation would have been more effective by (list other media) "instructor" (lecture)

3. Please indicate anything about the teaching techniques used which especially seemed to help or hinder you.

helped me form opinions
explanations helpful
clarity
more class discussion needed
repetition helpful

4. What did you like least about the lesson?

repetition (2)
too much detail
too much testing
not enough time
couldn't recognize viewpoint when read article

5. What did you like most about the lesson?

explanation (5)
how my views changed
compact (2)

6. Were you able to meet with your instructor individually to discuss your progress on this lesson?

12 Yes
4 No

If "yes," how did you feel about this conference?

understanding
confident
greatly helped
effective

*Number of respondents.

Twelve of 16 students indicated that they were able to meet individually with the instructor to discuss their progress. Each felt positive about this conference; "The instructor helped (me) in understanding the lesson more," "I felt greatly helped by the conference," and "effective" were some of the comments.

There was no consistent pattern of responses concerning what the students liked or disliked about the module. For the most part, each student had a different answer. The most frequently mentioned positive feeling was "explanation" (understanding) which was listed by 5 students.

V. Recommendations

1. The individualized learning module on the "ideological spectrum needs to be revised primarily because student achievement was not at the high level of expectancy. The areas needed for revision are enumerated in the critque (see pp. 18-23). This writer and the module's author are presently working on the revision.

2. This practicum has demonstrated the importance of thorough developmental testing in revising and refining an individualized learning module.

3. A revised version of the module will be given to a Social Science 102 class during the fall semester 1975.

4. This writer has produced a lesson evaluation form (p. 20) which will be shared with other faculty members writing or evaluating individualized learning modules.

It is hoped that this lesson evaluation form will help new module authors think more carefully about the systematic design, approach, format and content they will use. This form should also help module authors pinpoint problem areas in their modules.

5. This writer has produced a student attitude form concerning the attitudes of students towards particular individualized learning modules. Student achievement is important and so is student attitude. This form will be shared with authors of individualized learning modules.

6. It is too early to recommend the initiation of an individualized learning course. First, it must be demonstrated that the module in question is successful. Once this has been established, the instructor who wrote the module on the "ideological spectrum" is interested in developing a series of modules for an entire course (Social Science 102).

7. This writer anticipates working with the instructor to develop new modules and to offer practical advice on setting up an individualized learning course.

8. As soon as it can be clearly demonstrated that individualized learning modules will enhance student learning and attitudes, this writer will suggest to the Central Adminstration of the City Colleges of Chicago that a special course be established to teach interested faculty how to design individualized learning modules.

Appendix A: Individual Posttest Scores

Student	Score
1	96
2	96
3	95
4	93
5	91
6	88
7	86
8	85
9	83
10	71
11	70
12	65
13	64
14	57
15	57
16	51
17	22

$N = 17$ $\Sigma x = 1270$

Mean = 74.706
Standard error of the mean = 4.929
Median = 83.0

Range = 22.0 to 96.0
Standard deviation = 20.325
Average deviation = 16.059

FOOTNOTES

[1]Statistics given by Ms. Ruth Barker, Vice-President of Kennedy-King College, to the faculty/administration meeting on June 6, 1975. Enrollment for the fall semester 1974 was 9,507 (5974 full-time enrollment); enrollment for the spring semester 1975 was 10,216 (6430 full-time); 305 teaching faculty.

[2]Philip G. Kapfer and Glen Ovard, Preparing and Using Individualized Learning Packages for Ungraded, Continous Progress Education (Englewood Cliffs, N.J: Educational Technology Publications, 1972), pp. 8-10.

[3]Ernest R. Hilgard and Gordon H. Bower, "Learning and the Technology of Instruction," Chapt. 16, Theories of Learning, 3rd ed. (New York: Appleton-Century-Crofts, 1966), pp. 541-584.

[4]James D. Russell, Modular Instruction: A Guide to the Design, Selection, Utilization and Evaluation of Modular Materials (Minneapolis: Burgess Publishing Co., 1974), p. 3.

[5]Barton R. Herrscher, Implementing Individualized Instruction, (Houston: ArChem Co., 1971), p. 4.

[6]James H. Block, Mastery Learning: Theory and Practice, (New York: Holt, Rinehart and Winston, Inc.,1971), pp. 3-4.

[7]Susan Meyer Markle, Good Frames and Bad: A Grammer of Frame Writing, 2nd ed. (New York: John Wiley & Sons, Inc., 1969), pp. 2-25.

[8]Peter Pipe, Practical Programming (New York: Holt, Rinehart and Winston, 1966), pp. 1 - 6.

[9]Spelios Stamos, "Instructional Models," Occasional Papers (Washington: Association for Educational Communications & Technology, 1973), pp. 1-80.

[10]Harlan L. Douglas, "Instructional Development in Three Phases," Audiovisual Instruction, Vol. 16, No. 10, December 1971, pp. 46-49.

[11]Jerrold Kemp, Instructional Design: A Plan for Unit and Course Development (Belmont, California: Fearon Publishers, 1971), pp. 1-10.

[12]Robert M. Gagne and Arthur W. Melton, Psychological Principles in Systems Development (New York: Holt, Rinehart and Winston, Inc., 1962), pp. 1-63.

[13]John P. DeCecco, The Psychology of Learning and Instruction: Educational Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968), pp. 1-12.

[14]Spelios Stamos, "Instructional Models," pp. 48-52.

[15]Benjamin S. Bloom, et al., Taxonomy of Educational Objectives, Handbook I: Cognitive Domain, (New York: David McKay Co., 1956).

[16]Robert F. Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1968).

[17]Spelios Stamos, "Instructional Models," p. 51.

[18]Barton R. Herrscher, Implementing Individualized Instruction, p. 4.

[19]Ibid., p. 4.

[20]John B. Carroll, "Problems of Measurement Related to the Concept of Learning for Mastery," Chapter 3, Mastery Learning: Theory and Practice, James H. Block, ed. (New York: Holt, Rinehart and Winston, Inc., 1971), pp. 29-46.

BIBLIOGRAPHY

Avner, R. A., "Descriptive Statistics," CERL Statistical Package, PLATO lesson--computer-assisted instruction (Urbana: University of Illinois, 1974).

Block, James H., Mastery Learning: Theory and Practice, (New York: Holt, Rinehart and Winston, Inc., 1971).

Bloom, Benjamin S., et al., Taxonomy of Educational Objectives, Handbook I: Cognitive Domain (New York: David McKay Co., 1956).

Carroll, John B., "Problems of Measurement Related to the Concept of Learning for Mastery," Chapter 3, Mastery Learning: Theory and Practice, James H. Block, ed. (New York: Holt, Rinehart and Winston, Inc., 1971), pp. 29-46.

DeCecco, John P., The Psychology of Learning and Instruction: Educational Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968).

Douglas, Harlan L., "Instructional Development in Three Phases," Audiovisual Instruction, Vol. 16, No. 10, December 1971, pp. 46-49.

Gagne, Robert M. and Melton, Arthur W., Psychological Principles in Systems Development (New York: Holt, Rinehart and Winsotn, Inc., 1962), pp. 1-63.

Herrscher, Barton R., Implementing Individualized Instruction (Houston: ArChem Co., 1971).

Hilgard, Ernest R. and Bower, Gordon H., "Learning and the Technology of Instruction," Chapter 16, Theories of Learning, 3rd ed. (New York: Appleton-Century-Crofts, 1966), pp. 541-584.

Kapfer, Philip G. and Ovard, Glen, Preparing and Using Individualized Learning Packages for Ungraded, Continuous Progress Education (Englewood Cliffs, New Jersey: Educational Technology Publications, 1972).

Kemp, Jerrold, Instructional Design: A Plan for Unit and Course Development (Belmont, California: Fearon Publishers, 1971).

Mager, Robert F., Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1968).

Magidson, Errol, "Mastery Learning and PLATO," Resources in Education, ERIC, #ED 100 435.

Markle, Susan Meyer, Good Frames and Bad: A Grammar of Frame Writing, 2nd ed. (New York: John Wiley & Sons, Inc., 1969).

Pipe, Peter, Practical Programming (New York: Holt, Rinehart and Winston, 1966).

Russell, James D., Modular Instruction: A Guide to the Design, Selection, Utilization and Evaluation of Modular Materials (Minneapolis: Burgess Publishing Co., 1974).

Stamos, Spelios, "Instructional Models," Occasional Papers (Washington, D.C: Association for Educational Communications and Technology, 1973), pp. 1-80.